MOSQUITO-CONTROL ACTIVITIES IN THE PACIFIC NORTHWEST UNDER THE CWA PROGRAM

BY

H.H.Stage.

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H. H. Stage, Associate Entomologist
Division of Insects Affecting Man and Animals
U.S. Bureau of Entomology and Plant Quarantine, U.S.D.A.

Until 1930, aside from a few feeble local attempts, nothing had been done in Oregon and Washington to reduce the mosquito pest, which in some sections of the two States had become a severe handicap to various out-of-door enterprises. From 1930 until the fall of 1933 a definite, but inadequate, program of control was in force in Multnomah County, Oregon, and Skamania County, Washington. In 1931 a group of home owners on Bainbridge Island, in Puget Sound, began in a small way to oil and to drain, but their funds were inadequate for an effective program.

During the winter of 1933-34 mosquito control work in these States was greatly accelerated through an allotment of funds by the Civil Works Administration. Rather important work was accomplished in Multnomah, Columbia, and Tillamook Counties, Oregon, and in Kitsap, Skamania, and Clark Counties, Washington. This work, which began early in December 1933 and terminated as Federal projects on February 15, 1934, gave employment to 1,000 men in Oregon and 700 in Washington. Later the work was continued as State projects, but the number of men employed was rapidly reduced until on April 1 all work was discontinued.

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Three types of work were conducted, influencing three associations of mosquito species.

The first type was in the thickly matted jungles of willow brush along the Columbia and Willamette Rivers in Multnomah and Columbia Counties, Oregon, and in Skamania and Clark Counties, Washington. This brush was cleared up to reduce shelter and to discourage egg deposition by the flood-water mosquitoes Aedes vexans Meig. and A. aldrichi Dyar. These two species of mosquitoes occur in great hordes in early summer after thousands of acres of low ground along the rivers mentioned have been inundated by the annual freshets. They hatch from eggs deposited in the previous summer on damp cool ground protected from sun and wind by heavy growths of willow brush. While brush clearing is open to criticism as an efficient practice in mosquito-control activities, it has been found effective in reducing the mosquito pest in this section. We have several research studies under way in an effort to determine how the changed ecological conditions on the areas treated have affected the mosquito population there.

Most of the land on which the work was done is used as pasture, but the dense willow brush has prevented growth of grass and made the land largely useless. During the past summer it has been observed that where ground cleared of willow brush has been used for grazing purposes, the stock have kept the growth of willows well checked. In some other instances the owners of such property

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have kept the land clear and have requested that additional areas be cleared.

In addition to the clearing of willow and other brush in the four counties mentioned, dyking against high water and ditching of poorly drained areas were practiced. Brush was cleared from 3,390 acres of land, 68,297 lineal feet of ditches were dug, and several hundred yards of fill were thrown up as dyking. A total of 333,798 man-hours, at a cost of $175,254.44 for labor and supervision and $7,249.85 for tools, transportation, and supplies, was used on this project, which, besides aiding in the control of flood-water mosquitoes, furnished suitable hand labor for relief purposes and made fertile pasture land available for grazing.

The second type of control work was practiced on a typical salt-water marsh in Tillamook County, Oregon. Here approximately 1,500 acres of desirable pasture land which is flooded regularly by the ~~bi~~monthly high tides has been a particularly favorable breeding place for Aedes dorsalis Meig. Numerous potholes scattered over the marsh held water between high tides. From May until September the larvae of A. dorsalis were numerous in these holes, and the adults were a most annoying pest to dairy cattle pastured in the marsh. Under the CWA program the potholes were connected with the main channel by ditches or, if small, were filled with sods taken from newly con-

have kept the land clear and have requested that additional areas be cleared.

In addition to the clearing of willow and other brush in the four counties mentioned, dyking against high water and ditching of poorly drained areas were practiced. Brush was cleared from 5,330 acres of land, 88,297 lineal feet of ditches were dug, and several hundred yards of fill were thrown up as dyking. A total of 555,798 man-hours, at a cost of $175,254.44 for labor and supervision and $7,249.85 for tools, transportation, and supplies, was used on this project, which, besides aiding in the control of flood-water mosquitoes, furnished suitable hand labor for relief purposes and made fertile pasture land available for grazing.

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structed ditches. A total of 33,420 lineal feet of ditches was constructed, 3,000 lineal feet of stream banks was cleared, 2,570 cubic yards of fill made, 200 acres of potholes drained, and potholes totaling 1.86 acres in area were filled. This furnished 11,105 man-hours of labor and supervision at a total cost of $6,435.04 for wages and salaries. Tools, supplies, and transportation cost $1,121.94.

During the last summer season several inspections were made of the marsh, and the method of control has been found to work perfectly. Long-time residents marvel at the freedom from mosquitoes and tell of "seeing only 3 mosquitoes this summer". An important dairy section of Tillamook County was entirely free during 1934. Dairymen reported that mosquito eradication was followed by a marked increase in milk production in that district.

The third type of control was conducted on the northern end of Bainbridge Island, in Puget Sound. Many fine summer homes are located there, since the island is within easy commuting distance of Seattle. The country is fairly rugged and in many places is so thickly overgrown with brush and large trees that it is nearly impenetrable. There were many springs and depressions where seepage and rainwater collected during early spring. Great numbers of Aedes aboriginis Dyar and A. fitchii Felt and Young emerged from these pools and remained nearby as a most annoying pest until midsummer. A few residents of the island organized 3 or 4 years ago as the Port Madison mosquito-control committee and attempted control by the

customary practice of oiling. Funds were inadequate, however, and it was difficult to treat all the pools because they were so hidden by briars and brush.

Under the CWA program the northern end of the island for a distance of 2 miles was completely surveyed, and all watercourses were ditched to the sound except one or two for which such treatment was impractical. In the latter instances the country was opened up by clearing so that the pools could be efficiently oiled. Ditches totaling 57,941 lineal feet were dug, 435 lineal feet of culverts was installed, and 30 acres was cleared of brush by 40,300 man hours of labor and supervision, at a total cost of $24,665.00 for wages and salaries and $4,461.24 for tools, supplies, and transportation.

Summary.

Under the CWA program during the winter of 1933-34, three types of work, influencing three associations of mosquito species, were conducted in the Pacific Northwest.

Flood-water mosquitoes, *Aedes vexans* and *A. aldrichi*, were reduced in numbers along the Columbia River near Portland, Oregon, by clearing their breeding grounds of heavy willow brush; a salt-water mosquito, *Aedes dorsalis*, was eliminated during 1934 from an isolated

1,500-acre salt marsh in Tillamook County, Oregon, by connecting potholes in which it bred with the main channel by ditches so as to allow the high tides to flush and drain out the breeding places; and temporary-pool mosquitoes, Aedes aboriginis and A. fitchii, were controlled on the northern end of Bainbridge Island, Washington, by eliminating pools of seepage and rainwater.

TOP. Thick willow brush before clearing on ground subject to flood. Eggs of Aedes vexans and A. aldrichii are deposited in large numbers in such situations.

BOTTOM. The same ground after treatment. The deposition of eggs is now discouraged because of the lack of shelter.

TOP. A tidal salt marsh at Sand Lake, Oregon at high tide. Numerous potholes occur which hold the water between high tides. Aedes dorsalis breed abundantly in these accumulations of salt water.

BOTTOM. The same area at low tide. Ditches have been dug connecting the potholes with the main channel. Wrigglers hatching at high tide are carried out as the water returns to the sea.

TOP. A pool of rain and snow water in thick brush on Bainbridge Island, Wash. Aedes aboriginis & A. fitchii breed in temporary accumulations of water of this kind in early spring.

BOTTOM. Areas as shown above have been cleared and drained to prevent the development of these species of mosquitoes.

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

WASHINGTON, D.C.

MEMORANDUM FOR DR. F. C. BISHOPP.

Dear Doctor Bishopp:

In accordance with Memorandum 575 of the Secretary, Paragraph 604, I have approved for outside publication manuscript 2860, "Mosquito-Control Activities in the Pacific Northwest Under the CWA Program," by H. H. Stage.

The edited retyped copy of this manuscript is returned herewith. A carbon copy, as required, has been forwarded to the Office of Information for reference and filing.

It is requested that the Bureau librarian be notified of the publication in which this article appears and the date of issue.

Very truly yours,

Chief of Bureau.

It is suggested that in reading this [illegible] the figures (see [illegible] figures on table page) be rounded off to 3,000, 11,000, 334,000, 175,000 and 7,000. Persons having the figures read can not easily know there is [illegible] as they can when seeing them printed. For publication, the complete [illegible] should always state, however, in reading the figures have been rounded off.

438 U. S. Courthouse,
Portland, Oregon.
Sept. 20, 1934

Mr. C. H. Bergstrom,
County Agricultural Agent,
Tillamook, Oregon.

Dear Mr. Bergstrom:

The active mosquito season is now over and we wish to determine the results of the work done by the Federal CWA Pest Mosquito Control during the winter of 1933-1934. We would therefore, greatly appreciate communications from yourself and particularly farmers living near Sandlake, telling of their experiences with the mosquito pest this season, compared with the seasons of other years.

This information will be important and is desirable whether the reports are good or bad. In fact, any comments and criticisms of the work will be greatly appreciated.

Yours very truly,

H. H. Stage,
Associate Entomologist.

Mr. W. E. Cornelius,
Portland, Oregon.
April 20, 1949

Mr. C. H. Bourgeron,
Bureau of Animal Industry,
Eugene, Oregon.

Dear Mr. Bourgeron:

The active mosquito season is now over and we wish to determine the results of the work done by the Federal CMA Pest Mosquito Control during the winter of 1948-1949. We would therefore greatly appreciate communications from yourself and particularly farmers living near Vandalia, telling of their experiences with the mosquito pest this season, compared with the seasons of other years.

This information will be important and is desirable whether the reports are good or bad. In fact, any comments and criticisms of the work will be greatly appreciated.

Yours very truly,

H. H. Stage,
Entomologist.

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF OREGON
TILLAMOOK

Nove. 15, 1934

Mr. H. H. Stage,
Associate Entomologist
U. S. Department of Agriculture
440 U.S. Court House,
Portland, Oregon.

Dear Mr. Stage:

I am enclosing herewith copies of letters written by some of the dairymen in the Sand Lake district regarding the mosquito control work carried on in that district last winter. You may use any or all of these if you think they will be of any benefit in promoting this program further.

I trust that these will arrive in time to do some good and if you prefer the originals, we have them and will be glad to mail them to you.

Very truly yours,

(Signed) C. [illegible]
County Agent.

Sandlake, Ore.
Nov. 12, 1934

Mr. C. H. Bergstrom,
County Agent,
Tillamook, Ore.

Dear Mr. Bergstrom:

I am herewith giving you my observations as to the result of the mosquito control work done last winter.

Here at my place there has been a most complete eradication of the mosquito menace and from the statements of others, it appears that the pesky mosquito has not been in eveidence about the lake as in former years.

I trust this control work will be continued until the nuisance is entirely abated.

Yours truly,

(Signed) L. F. Brode

C
O
P
Y

Sandlake, Oregon

Mr. C. H. Bergstrom

The mosquito work done here last year has entirely done away with the mosquitoes, did not have a one here this year. There were millions of them before.

(Signed) Eugene Atkinson

C

O

P

Y

Sandlake, Ore.
November 12, 1934

Mr. C. H. Bergstrom

Dear Sir:

In regard to the mosquito work it was pretty good but if we could get the work done in dyking this place instead of the ditching and fill up the holes instead of digging them out it would help a whole lot more and would not cost much more than they spent last year and would benefit more people so if we could get Government to help would be a lot more to till - a lot of our land that is worthless would be so we could use it. We have 18 to 20 acres that produce grass and hay and other things. So if you get a chance you can suggest about it besides we could move tract of the sand that is in the road on the dyke. Our road is a bother as the sand is moving in the road when it blows hard so it may be you can help us some way and oblige.

(Signed) George Galloway

C
O
P
Y

Sandlake, Oregon
November 11, 1934

Mr. C. H. Bergstrom
County Agent
Tillamook, Oregon.

Dear Sir:

In answer to your letter in regard to Mosquito Control Work, will say that it was very satisfactory in this section.

Very few mosquitoes appared this last summer and fall, the stock could feed unmolested and one did not need a net to make hay on the tideland.

I would like to see the work continued.

Yours truly,

(signed) Roy Robertson

C
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Sand Lake, Ore.
Nov. 10, 1934

Dear Mr. Bergstrom:

The mosquito control project is apparently a success. Although this farm contains no tideland and therefore does not breed many mosquitoes, I should like to see the work continued for the benefit of the community at large.

Very sincerely,

(signed) Mrs. Eva Webb

By: C.M.W.

C
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P
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Sand Lake, Oregon.
November 10, 1934.

Mr. C. H. Bergstrom,

Dear Sir:-

Due to the work last winter of the "Mosquito Control", we had very few mosquitoes here this summer.

In former years it was a very disagreeable task to make hay in the tidelands, or gather berries in the woods or on the sand hills, but due to the normality of the mosquitoes this year these tasks were a pleasure.

I would like very much to see the control work continued.

Very truly,

(Signed) N. J. Myers

Sandlake, Oregon,
November 12, 1934.

Mr. C. H. Bergstrom,
County Agent,
Tillamook, Oregon.

Dear Mr. Bergstrom:

I have your letter regarding mosquito control work in Sand Lake.

I am very much pleased with the result of last winter's work here. On my end of the lake the work was practically completed with the result that the mosquitoes were almost entirely eradicated. My milk production for May and June this year was almost 20% more than May and June last year. On account of it being such a poor grass year the production for July and August this year was about the same as last. I am convinced that with grass condition normal, my production will run 20% more throughout the season than it did before the mosquito control work was done.

With the work completed, I'm convinced that Sandlake would be completely free from mosquitoes and it is only fair to assume that milk production would increase all around the lake in about the same proportion that mine did.

Since more than one half the milk produced in Sandlake is from tideland pastures, the benefit of the control work is a big item from that standpoint alone. Needless to say the absence of mosquitoes adds very materially to the comfort of man and beast alike.

I hope the work here may be completed.

Sincerely yours,

(Signed) E. E. Allen, Jr.

CITY OF ST. HELENS

C O P Y

St. Helens, Oregon

September,24,1934.

Mr.H.H.Stage,

Portland,Oregon.

Dear Sir;

In answer to your letter of the 30 inst.will say that I think the work done by the Federal C.W.A. Pest Mosquito Control forces last winter did some good.

We did not seem to have as many mosquitoes this year as some years before, therefore, I feel if this work could be continued it would be a great help to the surrounding community.

Yours very truly,

E. I. Ballagh, (signed)
Mayor.

CITY OF St. Helens

[illegible]

St. Helens, Oregon

September,24,1934.

Mr.T.R.Shaw,

Portland,Oregon.

Dear Sir;

In answer to your letter of the 20 inst.will say that I think the work done by the Federal C.W.A. Feat Emergency Control Forces last winter did some good.

We did not seem to have so many requisitions this year as some years before, therefore, I feel if this work could be continued it would be a great help to the surrounding community.

Yours very truly,

E. L. Dallage. (signed)
Mayor.

C O P Y

Skamania County

Board of County Commissioners

September 26, 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Court House,
Portland, Oregon.

Dear Sir:

Your letter of September 20th addressed to the County Commissioners of this county was brought up at their meeting last Saturday.

The members of the Board greatly appreciate the work that was done for the elimination of the moequito pest and only trust that further work by your division can be carried on again. It might be stated that this work not only carried on the good of ridding the county of mosquitoes but helped in the way of giving work to those unemployed.

We appreciate greatly the work that has been done and hope that the Washington D. C. office will realize the benefits derived and authorize further expenditures.

Trusting we can be of further assistance to you, we are

Board of County Commissioners

By Mahel J. Fasse (signed)
Clerk of said Board.

Skamania County

Board of County Commissioners

September 25, 1934.

Mr. R. R. Sleger,
Associate Entomologist,
U. S. Court House,
Portland, Oregon.

Dear Sir:

Your letter of September 20th addressed to the County Commissioners of this county was brought up at their meeting last Saturday.

The members of the Board greatly appreciate the work that was done for the elimination of the mosquito pest and only trust that further work by your division can be carried on again. It might be stated that this work not only carried on the good of ridding the county of mosquitoes but helped in the way of giving work to those unemployed.

We appreciate greatly the work that has been done and hope that the Washington D. C. office will realize the benefits derived and authorize further expenditures.

Trusting we can be of further assistance to you, we are

Board of County Commissioners

By Mabel I. Passe (signed)
Clerk of said Board.

Robert L. Rockwell

C O P Y

October 10, 1934

Mr. H. H. Stage
Associate Entomologist
438 U. S. Court House
Portland, Oregon

Dear Mr. Stage:

The writer has again been appointed chairman of the Port Madison Mosquito Conteol Committee by Mr.J. Speed Smith, the new president of our community organization, the Port Madison Water Company.

The committee is agreed that our first and most pleasant duty is to again express our gratitude for your always courteous, prompt and efficient cooperation with us in our efforts during the past four years.

We are sure that your endorsement of the control methods originally instituted by the Committee encouraged the community to subscribe to the mosquito control fund, so our local control could be continued from year to year.

As the result of our joint activities it was soon quite evident that, while we were able to secure a sizeable measure of local relief from the pest mosquitoesby means of the clearing and oiling operations conducted by the committee, the discovery of large areas of proven breeding places within easy flight distance of our control district was convincing evidence of our financial inability to properly extend our control to the point where it would really eleminate the pests.

Your Bureau's generous allocation of funds for the C.W.A. mosquito control work on Bainbridge Island, so completely changed the picture, and this summer there were practically no mosquitoes to torment the residents of Port Madison.

About three quarters of a mile up the bay where the work was not completed, however, the mosquitoes again were so bad this summer that workmen dreaded to work there, and the residents were glad to take refuge within their screened porches.

October 25, 1934

Mr. H. S. Grant
Associate Entomologist
Ann H. M. Smith House
Portland, Oregon

Dear Mr. Grant:

The writer and again wish to express our appreciation of the fine assistance rendered us by the Portland Entomological Laboratory in our recent campaign against the Smith, the new president of our recently organized Port Madison Water Company.

The cooperation is almost too good to be true. Civil and military duty is an again expressed our gratitude for your always courteous, prompt and efficient cooperation with us in our efforts during the past two years.

We are sure that your endeavors of the coming methods originally instituted by the Portland Entomological Laboratory in the economical and effective manner in which the community to minimize to the economically important crops be prevented from our local country should be continued.

In the results of our light scaleless [illegible] quite evident that, while we were able to secure a sizeable measure of local relief from the pest mosquitoes by the common methods of the shooting and killing operations conducted by the company, the discovery of large areas of breeding [illegible] place within easy flight distance [illegible] was convincing evidence of our ultimate inability to control to the point where it would [illegible] eliminate the pests.

Your Mr. [illegible] the C.E.A. [illegible] immediately abandoned the [illegible] practically no [illegible] to [illegible] machinery.

About three quarters of a mile up the [illegible] the work was not completed, however, the most [illegible] were [illegible] and this summer that women dressed to [illegible] and the residents were glad to [illegible] [illegible] [illegible].

This great contrast has positively proven the effectiveness of the control methods employed, and we trust you will use your influence with the powers that be to secure a continuation of the program in case C.W.A. funds are made available for relief employment this winter.

The unemployment situation on Bainbridge Island was acute last winter. Many self respecting families were all but destitute, and were unable to seek employment effectively because of the high cost of transportation to and from the Island, which has very few industries within its own boundaries.

It seems to us that the earnestness and willingness of the men employed on the C.W.A. mosquito control project are better expressions of their appreciation of this employment at a time when it was so sorely needed, than anything we can write.

The situation has been relieved in this respect somewhat, but with the fishing, berry picking and canning seasons ended, want againwill be confronting many of our Island residents this winter.

Another phase of the mosquito control program that has not been emphasized, is the fact that the clearing and draining operations open up rich bottom land for cultivation. An offer was made for the 20-acre parcel owned by the Port Madison Water Company, where the committee's clearing work was done year before last, but had to be refused because this land is held to protect one of our springs that constitute our source of water supply.

Again thanking you for your splendid cooperation, and assuring you of our desire and willingness to be of assistance in furthering an all-island mosquito control district, and with kind personal regards to yourself and staff, we remain,

Very sincerely yours,

Port Madison Mosquito Control Committee

By Robert Rockwell (signed)
Chairman

RLR:S

This great contrast has positively proven the effectiveness of the present method, and as I know you will use your influence with the powers that be to secure a continuation of the program in case C.W.A. funds are made available for relief employment this winter.

The unemployment situation on Bainbridge Island was acute last winter. Many self respecting families were all but destitute, and were unable to seek employment effectively because of the high cost of transportation to and from the Island, which has very few industries within its own boundaries.

It seems to us that the earnestness and willingness of the men employed on the C.W.A. projects, and the better appearance of their surroundings at this employment at a time when it was so sorely needed, than anything we can write.

The situation has been relieved to some extent, but also the floating, heavy population and some seasonal ended, very evidently be unfortunate for the Island residents this winter.

Another phase of the mosquito control program that has not been mentioned, is the fact that the draining and draining operations open up vital sorties land for cultivation. An offer was made for the 20-acre parcel owned by the Puget Water Company, which the committee's plan was done year before last, but had to be refused because this land is held to protect one of our springs that supplies our source of water supply.

Again thanking you for your splendid cooperation, and assuring you of our desire and willingness to be of assistance in furthering an all-Island mosquito control effort, and with kind personal regards to yourself and staff, as ever,

Very sincerely yours,

Port Madison Mosquito Control Committee

By Robert Schmeil (signed)
Chairman

RHS:S

JOHN GRAHAM, A.I.A.

C O P Y

October 3, 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Bureau of Entomology,
438 U. S. Court House,
Portland, Oregon.

Dear Mr. Stage:-

I have recently returned from the Orient and from my family and friends, who spent the summer at Port Madison, have glowing accounts of the success of the mosquito control work done last winter. As far as I can gather, the results have been perfect.

I am not sure whether you are familiar with the beginnings of that undertaking. Some years ago, when I was President of the Port Madison Community Club, I suggested we take steps to get the mosquito pest under control, and while many were secptical as to our ability to accomplish results, I asked Mr. Rockwell to take charge of the matter. He went into the work very enthusiastically and got in touch with you and other scientific technical experts and so the work was started.

We were soon able to see, however, that the job was much too large for a small community like ours to cope with. Then the C.W.A. program was inaugurated last year. This work under your direction gave, not only needed employment, but has proved a tremendous benefit to the community.

There is still some work to be done in the neighborhood of Port Madison and Agate Point and it should ultimately be extended to cover the whole island. Of all the C. W. A. work that I saw done in various places last year, the most valuable has been this mosquito control work and I certainly hope you will be able to find relief employment for a number of men next winter in continuing the good work.

Yours very truly,

JG-AB (signed) John Graham

Mr. H. B. Steen,
Associate Entomologist,
U. S. Bureau of Entomology,
458 U. S. Court House,
Portland, Oregon.

Dear Mr. Steen:

I have recently returned from the Orient and from my family and friends, who spent the summer at Lake Sullivan, near Glenwood, Washington, I learn of the results of the mosquito control work done last summer. As far as I can gather, the results have been perfect.

I do not care whether you are familiar with the circumstances of that undertaking. Some years ago, when I was President of the Port Madison Community Club, I suggested we take steps to get the mosquitos under control, and while many were sceptical as to our ability to do so, the majority favored, I asked Mr. Hopkins to take charge of the matter. He went into the work very enthusiastically and got in touch with you and other scientific technical experts and so the work was started.

It was soon able to see, however, that the job was much too large for a small community like ours to cope with. When the C.W.A. project was inaugurated last year, this work under your direction was not only headed employment, but has proved a tremendous benefit to the community.

There is still some work to be done in the improvement of Port Madison and Agate Point and it should certainly be attempted to cover the whole island. Of all the C. W. A. work that I saw done in various places last year, the most valuable was that mosquito control work and I certainly hope you will be able to find better employment for a number of men next winter in continuing the good work.

Yours very truly,

JG-AB (signed) John Graham

Bainbridge Island

C O P Y

September 27 1934.

Dear Mr. Stage:

In reply to your enquiry of whether or not your mosquito control work on Bainbridge had been successful, I wish to state that by universal consent your work has been an entire success.

I might add that from my own observation, I have it far more successful than I ever deemed possible. On my own place, in former years it was almost impossible to sit on my porch or wander in the garden towards sunset. During the day-time, it was not especially pleasant to walk along the shady road north of place, so numerous, often were the mosquitoes. This year I have not been bitten by a single mosquito near my place. The people around Madison report about the same favorable conditions.

I wish, therefore, here to congratulate you for the excellent work of your Department. I only hope that it will be possible to continue your work this Fall on the south of the Island.

Yours sincerely :

Committeeman of the Bainbridgs Island
Community Club.
Formerly associate Geologist U.S.Engineers.

M T Hopkins (signed)

C O P Y

September 20, 1934.

Dear Mr. Shaw:

In reply to your enquiry of whether or not your mosquito control work on Bainbridge has been successful, I also [illegible] heard favorably concerning your work on the south shore.

I might add that from my own observation, I have it far more successful than I ever dreamed possible. [illegible] years it was almost impossible to sit on my porch of evenings in the greater Seattle area. During the [illegible] it was quite pleasant to walk along the sandy [illegible], to swimming, often were the mosquitoes. This year I have not been bitten on a single mosquito near my place. The people around Madison report about the same favorable conditions.

I feel, therefore, here [illegible] for the [illegible] work of your Department. I only hope that it will be possible to continue your work this Fall on the south of the Island.

Yours sincerely,

Committeeman of the Bainbridge Island
Community Club.
Formerly associate Geologist U.S.Engineers.

P.S. At next month's meeting
I will see to it that
the Community Club sends you
a vote of thanks.

Rolling Bay

Bainbridgs Island Wash.

Sept.27 1934

Dear Mr. Stage:

On my return from a somewhat extended fishing treip East of the Mountains, I found your letter.

Yes, your mosquito work on the Island has been an entire success. Everyone to whom I have spoken on the subject is entirely convinced of this. On a separate sheet I am writing you a testimonial of the fact. Yates some time ago suggested that I write a letter of commendation of your work to Washington. At the time I was about to sail for Alaska on a fishing and touring trip and failed to write this letter, I will do so now for I think that your Department deserves it. (I will obtain the endorsement of the Community Club on this)

If you come over here let me know some time in advance and I will organise a fishing trip foryou and your friends on the Trilobite. Yates who is on a temporary job with the U.S.Highways may be back by then and we will take him along.

I heard today that a considerable fund was to be allotted to relief work on the Island this Fall. If these funds become available we shall try to have it put in mosquito work to terminate your whole Island project. If anything developes about these funds I shall take the matter up with the relief administration and try to have most of them in favor of pest eradication work. Work on the roads is almost useless. We have too many roads as it is, which require more upkeep than we can afford.

My best regards to your assistants, the Gjulins.
Cordially yours: M T Hopkins (signed)

P.S. At next month's meeting
I will see to it that
the Community Club makes
a vote of thanks.

Rolling Bay

Bainbridge Island Wash.

Sept.27 1934

Dear Mr. Stolpe:

On my return from a somewhat extended fishing trip East of the Mountains, I found your letter.

Yes, your mosquito work on the Island has been an entire success. Everyone to whom I have spoken on the subject is entirely convinced of this. On a separate sheet I am writing you a testimonial of the fact. Yours some time ago [illegible]

commendation of your work to Washington. At the time I was about to sail for Alaska on a fishing and touring trip and failed to write this letter, I will do so now for I think that your Department deserves it. It will obtain the endorsement of the community [illegible]

If you come over here let me know some time in advance and I will organize a fishing trip for you and your friends on the Trilobite. Taber who is on a temporary job with the U.S.Highways may be back by then and we will take him along.

I heard today that a considerable fund may be allotted to rural work on the Island this Fall. If these funds become available we shall try to have it put in mosquito work [illegible] Island project. If anything happens about this [illegible] I shall [illegible] the matter up with the relief [illegible] in favor of pest eradication work. Work on the roads is almost useless. We have too many roads as it is, which [illegible] closer than we can afford.

My best regards to your assistants. Yours truly,
Cordially yours: H T Hopkins (signed)

C O P Y

J. Speed Smith,
Attorney at Law,
Dexter-Horton Building
Seattle

October 10, 1934

Mr. H. H. Stage
Associate Antomologist
438 U. S. Court House,
Portland, Oregon.

Dear Sir:

The people of the north end of Bainbridge Island owe to your department a debt of gratitude that can never be paid for two reasons: first, the splendid work which was done by the government in mosquito control has made the north end of the island a place in which people can live with some degree of comfort, since we at Port Madison had no mosquitoes last year. Secondly, by doing this work the government employed a great number of people upon the island who were destitute.

It seems a pity that the work that you began could not be finished by reason of lack of funds. It seems to me that any funds available for the employment of idle men should be allotted for the completion of your work. It would be a calamity for your task to be only half completed.

With kindest personal regards, I am

Yours very truly

JSS:B

(signed) J. Speed Smith
President, Port Madison Water Co.

J. Speed Smith
Attorney at law,
Dexter-Horton Building
Seattle

October 10, 1934

Mr. [illegible]
Assistant Attorney-General
and U. S. Court House,
Portland, Oregon.

Dear Sir:

The people of the north end of Bainbridge Island owe to your department a debt of gratitude that can never be paid for two reasons; first, the splendid work which was done by the government in connection conducted was made the north end of the island a quite in [illegible] and live with some degree of comfort, since we at last [illegible] [illegible] Secondly, by doing this work the government [illegible] employed a great number of people upon the island who [illegible].

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With kindest personal regards, I am

Yours very truly

JSSB

(signed) J. Speed Smith
President, Port Madison Water Co.

COPY

October 9th 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Bureau of Entomology,
No. 438 U. S. Court House,
Portland, Oregon.

My dear Mr. Stage:

As a resident for many years of Port Madison on Bainbridge Island, I wish to express my appreciation of the work done by yourself and Associates in practically eliminating mosquitoes in the North end of our Island.

For the past two years I have been President of our Water Company (which is really an Improvement Club). I followed this work very closely and personally know of the wonderful results you have accomplished.

I sincerely hope this work is going to be continued as I feel sure that a little more clearing and drainage would make this Island a perfect summer resort.

Again thanking you, I am

Yours very truly

(signed) E. Cunningham

C O P Y

October 9th 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Bureau of Entomology,
No. 438 U. S. Court House,
Portland, Oregon.

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Again thanking you, I am

Yours very truly

(signed) E. Cunningham